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54 **Panelled door.**

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Description

The present invention relates to panelled doors, such as may be installed as the vehicle access doors of garages, especially domestic garages, but including similar doors for other purposes. The invention will be described as applied to doors for garages.

Garage doors are required to be produced in a wide range of different sizes and it is therefore common for manufacturers to make such doors in the form of a generally rectangular frame into which one or more panels may be fitted. This approach allows doors to be assembled from different numbers of differently-sized panels and also permits panels of different designs to be assembled. However existing doors of the panelled type suffer from various disadvantages.

In Specification DE-U-1850585, a door is described which comprises a frame formed from lengths of a metal box section having a peripheral flange extending into the plane of the door and the door panel is fitted in a position against the rear of the flange and secured there by fixing means in the form of screws extending through the flange into the panel. However the panels in doors of this general type are more usually mounted forward of such flanges and secured thereto from the rear, in order to make the panel fixings invisible from the front of the door. A result is that the maximum thickness of door panel that is aesthetically acceptable is determined by the distance from the front of the frame to the flange. Panels whose thickness differs much from this distance tend to give the assembled door an unattractive appearance. Secondly, if the panels are of timber, aesthetic considerations have led them to be secured with screws from the rear but, when the timber is relatively thin, fixing in this way does not produce a satisfactorily strong construction.

It is an object of the present invention to provide a panelled door which is a significant improvement over such doors of the above-described, presently-available type and wherein some at least of the disadvantages of such doors are reduced or eliminated.

The panelled door of the present invention comprises a generally rectangular frame formed from lengths of a metal box section having a peripheral flange extending into the plane of the door and one or more flat door panels fitted therein in a position abutting a rearward face of said peripheral flange and secured in said position by fixing means and is characterised in that the peripheral flange is located along a line in the region of the front of the door, that said box section has a zone of reduced thickness having a generally flat surface extending generally perpendicular to the plane of the door and that said fixing means extend through said generally flat surface.

Thus it is characteristic of the door of the present invention that the frame is of box section, that the

panel or panels are fitted into the frame behind the peripheral flange and that the panel or panels are secured from the side. As a result, the appearance of the front of the door will be independent of the thickness of the panel(s), the fixing of the panel(s) is not visible from the front or even the back of the door, and even relatively thin timber panels can be well secured in a manner which is not dependent on the panel thickness.

The door frame is formed from metal lengths of box section, as indicated, and this structure itself contributes significantly to the overall rigidity of the door. However it is particularly preferred that the metal section should have a profile formed as two parallel box sections, spaced apart by the flat zone of reduced thickness through which the panel(s) are secured. The flat zone may comprise a single thickness of metal but it is preferred that it comprise two thicknesses of metal, for example as described in more detail hereinafter with reference to the accompanying drawings. When the frame comprises a double-box profile as referred to above, the two box sections may be of different dimensions, at least in the direction of the thickness of the door.

The peripheral flange against which the panel(s) are secured preferably extends from the foremost edge of the frame but may if desired be located a little to the rear of that edge. The width of the flange in the direction of the plane of the door is determined by both structural and aesthetic considerations but may typically lie within the range from 1 cm. to 2 cm. The metal frame overall may typically have a thickness perpendicular to the plane of the door within the range from 4 cm. to 8 cm., especially from 5 cm. to 7 cm.

Although the door according to the present invention may comprise a single panel within the frame, usually it will comprise two or more panels. Typically the door will comprise at least three panels in its width. In subsequent description in this specification, reference will be made to the door having "panels" (in the plural) but it will be understood that this is not intended to limit the invention to doors having more than one panel.

The panels may be of metal, timber or glass-reinforced plastic and their thickness is independent of the front-to-back thickness of the frame. However the structure of the door according to the invention is such that the panels may be relatively thin; thus the panels will usually be less in thickness than the frame. For example, a suitable metal panel may comprise a single thickness of pressed metal, formed with a peripheral flange extending generally perpendicular to the plane of the panel to enable the panel to be secured to the frame or to an adjacent panel.

The method of securing the panels to the frame will be determined in part by the material of the panels. Thus timber panels will preferably be secured by

wood screws passing through the flat zone of the frame into the panel. Metal panels may be secured by rivets or similar methods of fixing. As one alternative, the panels may be secured in place against the peripheral flange by lengths of metal of angle section, abutting the rear of the panel and secured to the frame by fixing means passing through the generally flat zone of the frame.

Preferably the door is given additional strength by means of one or more bracing struts, extending across the frame at the rear of the panels.

The invention will now be further described, by way of example only, with reference to the accompanying drawings, wherein:-

Fig. 1 is a partial view, in horizontal cross-section, of a first preferred embodiment of the door according to the present invention; and

Figs. 2 and 3 are corresponding views, respectively, of second and third preferred embodiments of the door.

In each of the illustrated embodiments of the door, the frame is formed from four lengths of double-box section steel, only one of which is visible in these partial views. These steel sections are formed from sheet steel by roll forming and seaming and are assembled into the frame by welding at the four corners of the generally rectangular frame.

The steel section 10 comprises a first box section 11, joined to a second box section 12 by a narrow double-thickness neck forming a generally flat zone 13 extending throughout the length of each steel section. The dimensions of the second box section 12 are increased as shown in Fig. 1 as compared with the corresponding box section 12 in Figs. 2 and 3, to provide additional strength for a relatively larger door. From the box section 11, a flange 14 extends into the plane of the door around the whole of the door periphery, at the front face of the door.

The door of Fig. 1 is formed from three pressed steel panels 15, only one of which is visible. Each panel 15 is formed with a pair of opposed side flanges 16, with an external locating rib 17 in one side flange and a corresponding groove in the other; the rib 17 and grooves assist location and correct orientation of the panels and also assist in forming a seal between adjacent panels. The panels 15 are secured in place against the rearward face of the peripheral flange 14 by means of rivets 18 passing through the flat zone 13 and the flange 16. The whole door assembly is given added rigidity by cross-bracing struts 19.

In the door illustrated in Fig. 2, the relatively thinner panels 20 are held in place by lengths 21 of L-section steel, in turn secured by rivets 22 to the flat zone 13 of the frame sections 10.

Fig. 3 shows a third form of door, in which the door panels each comprise a structure of timber members 23 and a flat sheet of plywood 24. In this case the panels are secured by wood screws 25 pass-

ing through the flat zone 13 into the timber members 23, and by L-section lengths 26, secured by rivets 27 extending into the box section 12.

As can be seen, the door according to the present invention is able to present a neat front surface independently of the thickness of the various forms of panel illustrated and even timber panels may be securely held in place by fastening from the side of the frame. In addition, the channel formed between the two box sections in the region of the flat zone 13 may be used for mounting optional additional features of the doors, including, for example, snap-in plastics rubbing strips and/or lower dust seals.

Claims

1. A panelled door comprising a generally rectangular frame formed from lengths (10) of a metal box section having a peripheral flange (14) extending into the plane of the door and one or more flat door panels (15; 20; 23, 24) fitted therein in a position abutting a rearward face of said peripheral flange and secured in said position by fixing means (18; 22; 25), characterised in that the peripheral flange is located along a line in the region of the front of the door, that said box section has a zone (13) of reduced thickness having a generally flat surface extending generally perpendicular to the plane of the door and that said fixing means extend through said generally flat surface.
2. A panelled door according to claim 1, characterised in that said lengths (10) of metal section have a profile formed as two parallel box sections (11, 12) spaced apart by said zone (13) of reduced thickness.
3. A panelled door according to claim 2, characterised in that said two parallel box sections (11, 12) are of different dimensions in the direction of the thickness of the door.
4. A panelled door according to any of the preceding claims, characterised in that said zone (13) of reduced thickness comprises two thicknesses of metal.
5. A panelled door according to any of the preceding claims, characterised in that the width of said peripheral flange (14) in the direction of the plane of the door lies within the range from 1 cm to 2cm.
6. A panelled door according to any of the preceding claims, characterised in that the overall thickness of the frame (10) in a direction perpendicular to the plane of the door lies within the range

from 4 cm to 8 cm.

7. A panelled door according to any of the preceding claims, characterised in that the thickness of each panel (15; 20; 23, 24) is less than that of the frame (10). 5
8. A panelled door according to any of the preceding claims, characterised in that each panel (15) comprises a single thickness of pressed metal, formed with a peripheral flange (16) extending generally perpendicular to the plane of the panel. 10
9. A panelled door according to any of the preceding claims, characterised in that each panel (15; 23, 24) is secured in place by said fixing means (18; 25) passing through said flat zone (13) into the panel. 15
10. A panelled door according to any of claim 1 to 8, characterised in that each panel (20) is secured in place by lengths of metal (26) of angle section, abutting the rear of the panel and secured to the frame (10) by fixing means (22) passing through said flat zone (13) of the frame. 20 25

Patentansprüche

1. Getäfelte Tür mit einem im wesentlichen rechteckigen Rahmen, der aus Längsteilen (10) eines Metallkastenprofils besteht, welches einen seitlichen Bördelrand (14) aufweist, der sich in die Ebene der Türe erstreckt und ein oder mehrere flache Türpaneele (15;20;23,24), die darin in einer an der rückwärtigen Stirnseite des seitlichen Bördelrandes anliegenden Position gehalten sind, und in dieser Position durch Befestigungsmittel (18;22;25) festgelegt sind, dadurch **gekennzeichnet**, daß der seitliche Bördelrand entlang einer Linie im Bereich der Vorderseite der Tür angeordnet ist, daß das Kastenprofil eine Zone (13) reduzierter Dicke mit einer im wesentlichen planen Oberfläche enthält, die sich im wesentlichen senkrecht zur Türebene erstreckt und daß die Befestigungsmittel die im Wesentlichen plane Oberfläche durchsetzen. 30 35 40
2. Getäfelte Tür nach Anspruch 1, dadurch **gekennzeichnet**, daß die Längsteile (10) des Metallkastenprofils ein Profil haben, das aus zwei parallelen Kastenprofilen (11,12) gebildet ist, die voneinander durch die Zone (13) reduzierter Dicke voneinander beabstandet sind. 45 50 55
3. Getäfelte Tür nach Anspruch 2,

dadurch **gekennzeichnet**, daß die zwei parallelen Kastenprofile (11,12) in Richtung der Türstärke unterschiedliche Abmessungen haben.

4. Getäfelte Tür nach einem der vorhergehenden Ansprüche, dadurch **gekennzeichnet**, daß die Zone (13) reduzierter Dicke aus zwei Metallblechen unterschiedlicher Stärke besteht.
5. Getäfelte Tür nach einem der vorhergehenden Ansprüche, dadurch **gekennzeichnet**, daß die Breite des seitlichen Bördelrands (14) in der Richtung der Türebene im Bereich von 1 bis 2 cm liegt.
6. Getäfelte Tür nach einem der vorhergehenden Ansprüche, dadurch **gekennzeichnet**, daß die gesamte Dicke des Rahmens (10) in einer senkrecht zur Türebene liegenden Richtung im Bereich von 4 bis 8 cm liegt.
7. Getäfelte Tür nach einem der vorhergehenden Ansprüche, dadurch **gekennzeichnet**, daß die Dicke jedes Paneels (15;20;23,24) geringer als die des Rahmens (10) ist.
8. Getäfelte Tür nach einem der vorhergehenden Ansprüche, dadurch **gekennzeichnet**, daß jedes Paneel (15) aus einem gleichmäßig starkem Metallpreßteil besteht, das mit einem seitlichen Bördelrand (16) ausgebildet ist, der sich im wesentlichen senkrecht zur Ebene des Paneels erstreckt.
9. Getäfelte Tür nach einem der vorhergehenden Ansprüche, dadurch **gekennzeichnet**, daß jedes Paneel (15;23,24) an seiner Stelle durch die Befestigungsmittel (18;25) gesichert ist, die durch die flache Zone (13) hindurch in das Paneel hineinragen.
10. Getäfelte Tür nach einem der Ansprüche 1 bis 8, dadurch **gekennzeichnet**, daß jedes Paneel (20) durch längliche Metallabschnitte (26) mit einem Winkelprofil gehalten ist, die an der Rückseite des Paneels anliegen und an dem Rahmen (10) durch Befestigungsmittel (22) befestigt sind, die die flache Zone (13) des Rahmens durchsetzen.

Revendications

1. Porte à panneaux comprenant un cadre globalement rectangulaire formé à partir de longueurs (10) de profilé métallique tubulaire comportant un rebord périphérique (14), s'étendant dans le plan de la porte, et comprenant un ou plusieurs panneaux plats (15 ; 20 ; 23, 24) assemblés à l'intérieur du cadre, dans une position en butée contre une face arrière dudit rebord périphérique et bloqués dans ladite position par des moyens de fixation (18 ; 22 ; 25), caractérisée en ce que le rebord périphérique est disposé le long d'une ligne dans la partie frontale de la porte, en ce que ledit profilé tubulaire comporte une zone (13) d'épaisseur réduite ayant une face globalement plate s'étendant perpendiculairement au plan de la porte, et en ce que lesdits moyens de fixation traversent ladite face plate. 5 10 15 20
2. Porte selon la revendication 1, caractérisée en ce que lesdites longueurs (10) de profilé métallique sont composées par deux profilés tubulaires parallèles (11, 12) séparés l'un de l'autre par ladite zone (13) d'épaisseur réduite. 25
3. Porte selon la revendication 2, caractérisée en ce que lesdits deux profilés parallèles (11, 12) sont de dimensions différentes dans le sens de l'épaisseur de la porte. 30
4. Porte selon l'une quelconque des revendications précédentes, caractérisée en ce que ladite zone (13) d'épaisseur réduite comprend deux épaisseurs de métal. 35
5. Porte selon l'une quelconque des revendications précédentes, caractérisée en ce que la largeur du rebord périphérique (14) dans le sens du plan de la porte s'étend entre 1 cm et 2 cm. 40
6. Porte selon l'une quelconque des revendications précédentes, caractérisée en ce que l'épaisseur totale du cadre (10) en direction perpendiculaire au plan de la porte est comprise entre 4 cm et 8 cm. 45
7. Porte selon l'une quelconque des revendications précédentes, caractérisée en ce que l'épaisseur de chaque panneau (15 ; 20 ; 23, 24) est inférieure à celle du cadre (10). 50
8. Porte selon l'une quelconque des revendications précédentes, caractérisée en ce que chaque panneau (15) est constitué par une unique feuille de métal pliée, comportant une aile périphérique (16) s'étendant perpendiculairement au plan du panneau. 55
9. Porte selon l'une quelconque des revendications précédentes, caractérisée en ce que chaque panneau (15 ; 23, 24) est bloqué au moyen desdits moyens de fixation (18 ; 25) traversant ladite zone plate (13) pour pénétrer dans le panneau.
10. Porte selon l'une quelconque des revendications 1 à 8, caractérisée en ce que chaque panneau (20) est bloqué au moyen de cornières métalliques (26), venant en butée contre la partie arrière du panneau et bloquées sur ledit cadre (10) par les moyens de fixation (22) traversant ladite zone plate (13) du cadre.

FIG. 1

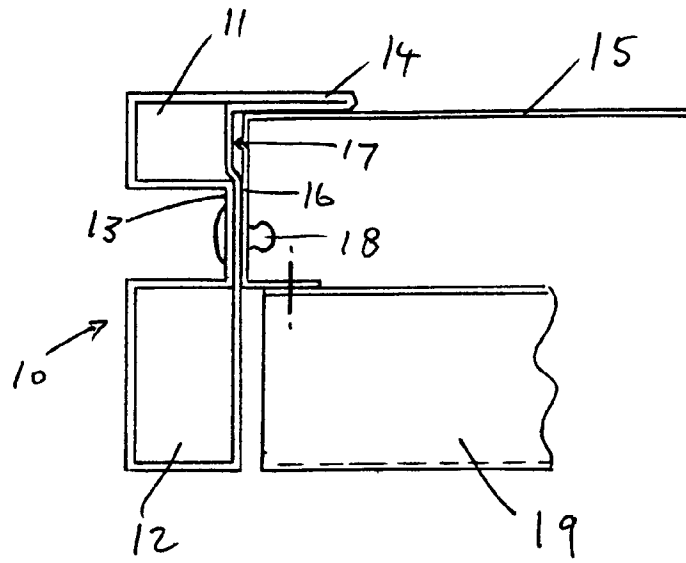


FIG. 2

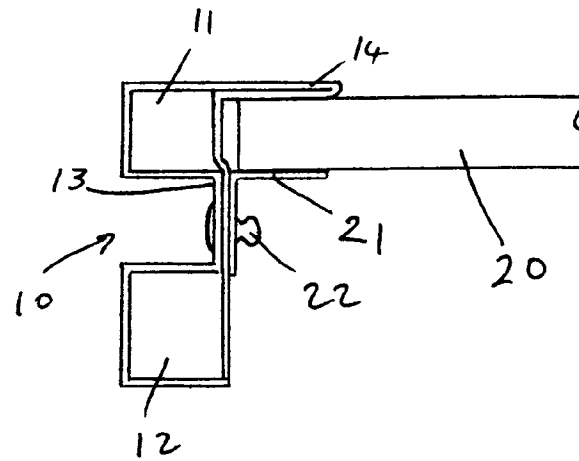


FIG. 3

